

REMARKS

Although a Notice of Appeal was filed in the case, a decision was made to pursue further prosecution before presenting the matter to the Board.

After entry of the foregoing amendment, claims 7-31 are pending in the application.

Objected-to claims 16-18 have been rewritten in independent form. Claims 1-6 were earlier canceled in accordance with the Examiner's restriction requirement

New claim 22 is modeled after original claim 8 of application 09/464,307 (now Patent 6,286,036).

New claims 23-31 are modeled after original claims 11-15, 19 and 21-23 of application 09/342,689 (now patent 6,311,214).

The earlier-pending claims (except 16-18) were rejected over Tow. Reconsideration of the Tow rejection is requested.

Tow is directed to a method and system for embedding machine readable data in printed grayscale images. Thus, he imagines that printed documents processed according to his technology can later be scanned and analyzed so as to read the embedded data.

Tow is said to effect his encoding by selecting a portion of the image characterized by constant nominal grayscale value, and then modulating those uniform values in an imperceptibly subtle manner at a fixed frequency to effect encoding of binary data.<sup>1</sup> Due to the subtle variation in grey scale value, and the frequency of variation, the encoding is said to be not generally perceptible to human observers who view the resultant printed document from normal viewing distance under normal illumination.<sup>2</sup>

Tow has certain evident shortcomings. Primary among them is that he fails to detail a functioning system.

For example, Tow fails to detail *how* the modulation of greyscale values across a patch of otherwise uniformly-grey pixels encodes the binary data. He identifies a box, 22, in Fig. 1 that is said to perform the greyscale modulation function, and he says the

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<sup>1</sup> Tow, col. 2, lines 32-40.

<sup>2</sup> Tow, col. 2, lines 43-52.

modulation should be limited to .045% (i.e., about one level out of 256),<sup>3</sup> but Tow gives no detail as to the manner of box 22's operation.

To illustrate, if the binary value to be encoded is 10100010, how does box 22 change the greyscale values? He doesn't say.

Tow's Fig. 3 allegedly shows the result of such encoding, but it is not enabling as to the process used.

How is a "1" bit encoded? A "0"? Tow doesn't explain.

Due to crosstalk and other anomalies, Tow counsels that the modulation should be limited to 0.045%.<sup>4</sup> In a region of absolute black (i.e., a greyscale value of 255), this allows a periodic modulation of a single greyscale value, i.e., from 255 to 254. But in a region of absolute white (i.e., a greyscale value of 0), how can any contrast modulation be effected? 0.045% of 0 is still zero. Again, Tow doesn't explain.

How can Tow's encoding communicate information, when it relies on a single value greyscale change out of 255? What are the chances of a scanner accurately capturing the greyscale values from a printed document with perfect fidelity – with nary a single greyscale value changed? Again, Tow doesn't explain.

What about greyscale variations that naturally occur in an image? How are these variations not mistaken for encoded information? Again, Tow doesn't explain.

In view of such failings, Applicant respectfully submits that Tow fails to meet the requirements of 35 USC 112, para. 1. As such, it falls short as a prior art reference.

Favorable reconsideration and passage to issuance are solicited.

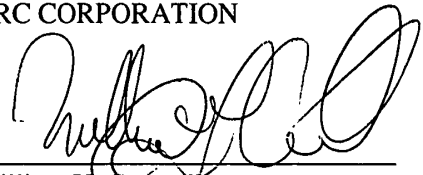
Date: August 28, 2003

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Respectfully submitted,

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<sup>3</sup> Tow, col. 5, lines 38-43.

<sup>4</sup> Tow, col. 5, lines 34-43.